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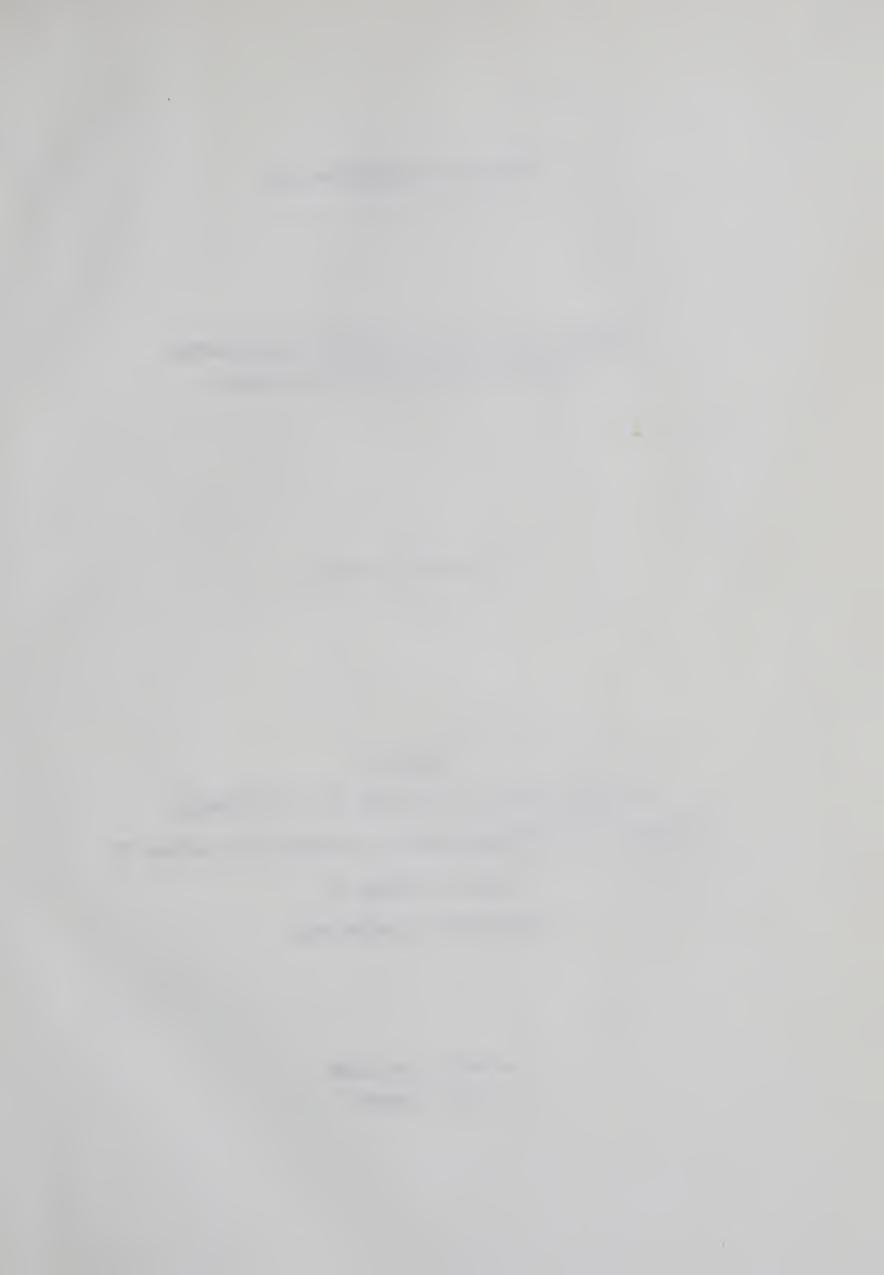THE UNIVERSITY OF ALBERTA

DIFFERENCES IN PSYCHOLOGICAL INDICES BETWEEN

THIRD AND FIRST YEAR STUDENT NURSES

by

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A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES

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FACULTY OF GRADUATE STUDIES

The undersigned certify that they have read, and recommend
to the Faculty of Graduate Studies for acceptance, a thesis entitled
"Differences in Psychological Indices Between Third and First Year
Student Nurses", submitted by Barbara M. McIntosh, in partial fulfil-
ment of the requirements for the degree of Master of Arts.

ABSTRACT

Two groups of student nurses varying in High School academic achievement and in nursing training were administered three group, paper and pencil tests designed to measure personality, intellectual, and interest variables. Three hypotheses were tested concerned respectively with differences between the two groups in 1) personality characteristics, 2) intellectual ability, and 3) ability to estimate their interest in the Nursing profession.

The subjects consisted of the population of third year ($N_3 = 110$) and first year students ($N_1 = 124$) in training in a three year diploma course at the Royal Alexandra Hospital School of Nursing in Edmonton, Alberta, Canada., during the 1962-63 academic year. The tests employed were the California Psychological Inventory, an abbreviated form of the Wechsler-Bellevue Intelligence scale Form 1, consisting of four Verbal subtests (referred to as V.I.C.S.) and the Strong Vocational Interest Blank.

Hypothesis 1, which stated that third year students would score higher than the first year group on four scales of the C.P.I. (Re, (Responsibility) So, (Socialization) To, (Tolerance) Sc (Self-control)), was only in part supported in that significant differences in the expected direction were found on the To and Sc scales but not on Re and So. On seven other C.P.I. scales, the third year students scored significantly higher than first year group.

Part a, of Hypothesis 2, was not confirmed. It was predicted that the third year students would achieve a higher Verbal I.Q. score

on the V.I.C.S than would the first year group. Analysis of the

test results indicated the reverse to be true. Test results indicated

support for Part b of hypothesis 2, in which it was predicted that the

third year students would score higher on the Information subtest of the

V.I.C.S.

Hypothesis 3, which stated that the third year students would

be better able to estimate their interest in the nursing profession than

would the first year group. was supported by the test findings.

In addition, ratings regarding overall proficiency and suit-

ability, were obtained from nursing educators on staff, and comparisons

were made, within each year, between nursing students rated "high" and

those rated "low".

Personality, intellectual and interest characteristics of

the average third and first year student were described as well as the

average "high" and "low" rated student within each year.

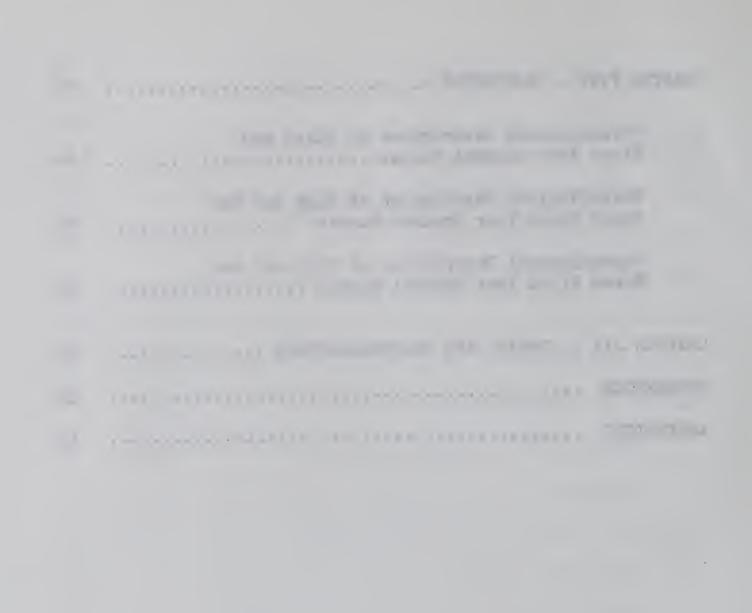Possible directions for further research were suggested.

ACKNOWLEDGEMENTS

Upon completion of this study, I would like to express my gratitude to my supervisor, Professor A. Hough, for his assistance and constructive criticism, as well as to the other members of my thesis committee; to Miss L. Wilson, for her guidance and encouragement; and to the Assistant Director of the Royal Alexandra Hospital School of Nursing and the subjects for their co-operation.

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CHAPTER 1

INTRODUCTION

GENERAL CONSIDERATIONS

According to a survey conducted by Tate in 1961 (Taylor et al, 1963, p.46) for the National League of Nursing, 30.5% of the students leave the Schools of Nursing before completing their training. This figure, coupled with the high turnover rate for professionally trained nurses (1956 - 42.2%, Taylor et al, 1963, p. 46), contributes to the current shortage of qualified nurses and adds impetus to the importance of conducting research within this field.

In general, the causes of attrition within the Schools of Nursing seem to fall within two broad categories: academic failure (most frequent reason for withdrawal - 42.6% Taylor et al, 1963, p. 48) and personal reasons. Results of a national study conducted in the United States by Dorffeld (1958), indicate that such reasons as "dislike of nursing" and "disillusionment with nursing", accounts for 9.5% of the drop outs. These reasons, in particular, are suggestive of the possibility of personality and interest differences between those who successfully complete nursing training and those who withdraw. It also questions whether or not students who left training possessed an unrealistic picture of the profession because of a lack of knowledge of what was involved in nursing training and later on the job requirements.

Spaney (1953) notes that, although students do withdraw during the second and third year of training, the majority leave within the first year. Nahm (1948) suggests that initial enthusiasm and motivation

dissipate as the student progresses in training and the more advanced students show evidence of tension and frustration, which is considered as being due to the increasing responsibilities which the students are expected to assume.

In view of the above statements, it appears that one of the major problems faced by nursing educators and administrators, is one of selection and recruitment of students interested in becoming nurses. Knowledge regarding intelligence, personal and other characteristics is required if there is to be a reduction in the individual and social waste involved in selecting and training of nursing students who are poorly equipped to meet the demands of the nursing profession.

Since about 1927, various types of tests and personnel instruments have been used in the selection of students for Schools of Nursing, and research conducted in which attempts have been made to evaluate their effectiveness in predicting success.

The opinion is held by administrators and educators in the nursing field, that there are certain personal qualities which constitute a "good" nurse. It is recognized that successful completion of the Registered Nurses examinations, written at the end of the three year program, does not necessarily indicate that one can then be considered as a "good" nurse. The examinations are not set up to measure competency or efficiency but rather general knowledge within the various areas of nursing. The interpretation (* see below) given for success on these examinations, is that the candidate can operate at a safe level as a nurse.

* Survey of the Schools of Nursing in the Province of Alberta (1963).

Throughout the years, the relationship between personality characteristics and the nursing profession has been considered and discussed by a number of investigators. Attempts to answer the question as to whether or not there exists a specific pattern of traits which are characteristic of nurses as a group has been in most studies, approached by comparing student nurses who have remained in training with those who withdrew and contrasting nurses with those employed or studying in other professional fields.

To date, no specific pattern of traits has emerged from the empirical data. Spaney (1953) suggests that differences probably exist in the combination of attributes rather than a unique pattern of traits.

Saunders (1954) remarked that, as an occupation, nursing has certain characteristics, some of which set it apart from other occupations and others that identify it with other occupations. He described the nursing profession as being highly diversified, of ambiguous status, relatively isolated in a social sense, conservative, and organized. He states that "Conservatism, dependability, stability, and caution are characteristics nurses are encouraged to develop, whereas attributes such as imagination, resourcefulmess, progressiveness and liking for change are discouraged". However, as as occupation, it is changing and a new role is emerging.

Since the major problem with which the present study was concerned was that of attempting to identify, with the use of three group tests, personality, intellectual and interest variables which differentiate between third and first year student nurses, hypotheses were made in relation to this purpose.

4

STATEMENT OF HYPOTHESES

     With respect to the psychological variables measured by
the three group tests - the California Psychological Inventory, an
abbreviated form of the Wechsler-Bellevue Intelligence scale Form 1
(referred to as V.I.C.S.), and the Strong Vocational Interest Blank,
it was hypothesized that specific differences would exist between the
third and first year student nurses.

Hypothesis 1.

     Prior to the presentation of the hypothesis, some mention
should be made regarding the selection of the C.P.I. scales which
would differentiate between the two groups of students. In general,
it was considered probable that the third year students would tend
to score higher on all C.P.I. scales thereby indicating, in Gough's
terms, better social and interpersonal adjustment. However, it was
felt that a more specific selection of scales was warranted.

     Since the third year students were approaching the end of
their nursing training, it was felt that this group should possess, to
a greater extent, those qualities which have been considered by nursing
educators, as important for nursing.

     Spaney (1953) submitted a list of 32 traits, considered as
descriptive of the "good" nurse, to a jury of nursing educators. Seven
of the adjectives listed - namely courageous, broad interests, enjoys
beauty, good judgment, performs procedures effectively, plans work,
and well groomed - were excluded on the basis that they did not constitute
"personality" traits.

In the present study, the remaining twenty-five traits were compared with the descriptions given by Gough (1957) for those individuals scoring high on the individual scales. Further clarification of the traits was obtained by consulting Roget's International Thesaurus. Only one trait - sense of humour - did not appear to lend itself to measurement on the scales selected. On occasion, one trait appeared to be measured by more than one scale.

Nursing trait	Apparently measured by
alert, economical, emotionally mature, stable, resourceful, thorough, conscientious, orderly, loyal, trustworthy, independent.	Re (Responsibility) - planful responsible, thorough, progressive, independent, conscientious, capable, dependable, resourceful, efficient, alert to ethical and moral issues.
emotionally mature, stable, tactful, courteous, thoughtful, adaptable, loyal, trustworthy, co-operative, good attitude towards criticism, respect for authority.	So (Socialization) - serious, honest, industrious, modest, obliging, sincere, steady, conscientious, responsible, self denying and conforming.
economical, thoughtful, self-controlled, emotionally mature, conscientious, orderly, trustworthy, thorough, sympathetic	Sc (Self control) - calm, patient, practical, self denying, inhibited, thoughtful, deliberate, strict and thorough in their own work and in their expectation for others, honest, conscientious.
tolerant, sympathetic, resourceful, enthusiastic.	To (Tolerant) - enterprising, informal, quick, tolerant, clear-thinking, resourceful, intellectually able and verbally fluent, having broad and varied interests.

This approach posed some problems, for the eighteen C.P.I. scales do not appear to be independent measures of the personality traits. However, as indicated in the above, the descriptions of the personal

qualities of the "good" nurse appeared to correspond most closely to four C.P.I. scales - Re (Responsibility), So (Socialization), Sc (Self control), and To (Tolerance).

On this basis, it was hypothesized that "the third year students would score higher than the first year students on four scales within Class 11 of the California Psychological Inventory - Re (Responsibility), So (Socialization), Sc (Self control), and To (Tolerance)."

Findings will be dealt with in Part A.

Hypothesis 2.

a) Third year students may be considered as having met at least some of the "success" criteria often used in research studies in that they have successfully completed more than two years of practical and theoretical work required by the School of Nursing and have remained in training. Of the original number of students (137) who commenced training in 1960, 19.7% withdrew before completing training - 37% of which did so because of "academic reasons". This suggests that, as a group, the third year students would be intellectually brighter than the first year group, in which potential drop outs are included. On this basis, it was hypothesized that the "third year students would score higher on the V.I.C.S. Verbal I.Q. than would the first year group".

b) As a byproduct of a study conducted by Aldridge (1961) in which the V.I.C.S. was administered to University of Alberta Hospital nurses, it was found that the mean Information subtest score of the Wechsler-Bellevue Intelligence Scale Form 1, lowered over time. The suggestion

was made that, within nursing training, abilities, as measured by this sub-test, may extinguish over time.

Consequently, for the present study, it was hypothesized that the "third year students would score lower than the first year group on the Information subtest of the V.I.C.S."

Findings will be dealt with in Part B.

Hypothesis 3.

As a result of exposure to approximately three years of training program in nursing, the third year students would have a more realistic perception of the nursing profession and consequently, it was hypothesized that "there would be less discrepancy between the third year students estimated and achieved scores on the Nursing scale of the S.V.I.B. than would be found with the first year students".

Findings will be dealt with in Part C.

Additional aspects of the study were conducted without a priori speculation regarding the results. Variables which best dis-criminate between those students in third and first year training given "high" ratings from those given "low" ratings will be examined and discussed under Part D and E respectively. Comparison of the student nurse population used in this study with relevant normative data available on personality and interest factors will be made.

CHAPTER II

REVIEW OF THE LITERATURE

Using two groups of nursing students, which differed in level
of High School standing and nursing education, the present investigation
is primarily concerned with determining whether or not differences exist
between such groups and can be measured by three group tests specifically
designed to measure personality, intellectual, and interest variables.
A review of the literature revealed no comparable studies, however,
research has been conducted which is directly and indirectly relevant
to the exploratory nature of the present study and therefore, studies
that pertain to the identification of nursing characteristics will be
incorporated in the review.

ATTRIBUTES OF A "GOOD" NURSE

Earle (1926) and Hyman and Dreyfuss (1930) noted that intellect-
ual ability was not the only important factor in nursing and suggested
that information regarding personality and interest was also essential.

Miles (1934), using the consensus of expert nursing opinion,
reported ten composite traits for which the candidate for nursing should
have superior aptitude. In 1938, the National League of Nursing Education,
listed thirty-two traits, covering a wide range of behavior, which were
considered as descriptive of a "good" nurse.

Spaney (1953), after reviewing the literature, compiled a
list of traits which were considered as necessary for the "good" nurse.
Submission of the list to a jury of nursing educators, resulted in

judgments subsequently divided into seven categories, which are listed below in order of importance.

I. Emotional Maturity: emotionally mature, self-controlled, stable.

II. Relationships with Patients and Staff: tolerant, sympathetic, tactful, thoughtful, courteous, frank.

III. Work Habits: resourceful, economical, thorough, conscientious, orderly, adaptable.

IV. Professional Attitude: loyal, trustworthy.

V. Motivation: alert, enthusiastic.

VI. Relationships with Co-workers and Supervisors: co-operative, good attitude towards criticism, respect for authority, independent.

VII. Morale: cheerful, sense of humour.

In England, Petrie and Powell (1951) investigating the personality factors of the "good" and the "poor" nurse, factor analyzed the results of ratings on eighteen personality and ability traits. They concluded that in addition to a general factor termed "general nursing ability", the "good" nurse must possess "intellectual capacity and personal relations". Traits with high loading on the "personal relationships" factor were patience, understanding, kindness and sympathy.

STUDIES RELATED TO PREDICTION OF SUCCESS

A review of the literature indicates that many of the studies conducted within the field of nursing, have been directed towards the

prediction of success in basic and graduate nursing. Only those studies

which are directly pertinent to the present study will be reviewed.

In 1957, Cuadra and Reed, using the California Psychological

Inventory to predict success for psychiatric aides, found no relationship

between test scores and actual job tenure and performance. They con-

cluded that one of the tests virtues, namely its direction towards "normal",

was one of its limitations as there was not sufficient room for behavior

pathology. Rosenberg et al (1962) attempted to predict grades of students

in three military courses, - Neuropsychiatric, Clinical Psychology and

Social Work procedure and found that a combination of the California

Psychological Inventory - Achievement by Independence (Ai) score and the

General Technical score from the Army Classification Battery, made an

effective instrument for screening students for admittance to these courses.

Combining the Clinical Psychology and Social Work classes, they found that

C.P.I. scales Do (Dominance), Cs (Capacity for Status), Sp (Social presence),

Sa (Self acceptance), Wb (Sense of well-being), To (Tolerance), Cm (Comm-

unality, Ai (Achievement via Independence), Ie (Intellectual Efficiency),

Py (Psychological-mindedness), and Fx (Flexibility), correlated significantly

with academic grades, whereas for the Neuropsychiatric class Do (Dominance),

Cs (Capacity for Status), To (Tolerance), Ai (Achievement via Independence),

and Fx (Flexibility) were significantly related to academic grades.

Mindess (1957) administered the Rorschach and the Wechsler-

Bellevue Intelligence scale to sixty-eight nurses. Using a Prognostic

Rating scale for ego strength on the Rorschach, he correlated predictors

with academic and ward grades. The multiple correlation coefficient of .586

was significant at the .01 level of confidence and he concluded that

both intelligence and ego strength were significantly related to overall

achievement.

Aldridge (1961), using the University of Alberta Hospital

nurses as subjects, conducted a study to determine the predictive

validity of the V.I.C.S. (an abbreviated form of the Wechsler-Bellevue).

The conclusion was reached that the V.I.C.S. did not predict Registered

Nurses examination success better than the American Council on Education

Psychological Examination (A.C.E.) or the Wechsler-Bellevue Full Scale I.Q.

As a byproduct of her investigation, it was found that the mean Inform-

ation score lowered over a two year period of time and she suggests

that these results might be indicative of extinction, during nursing

training, of the abilities measured by this subtest.

Hilgard (1939), Super (1941) and Navran (1953) found no sig-

nificant relationship between the Strong Vocational Interest Blank

Nursing scale score and their criterion of success. Hilgard concluded

that those with ratings below A showed little likelihood of completing

training.

However, Navran (1953) cast some doubt upon the validity of

the Strong Nursing scale and is supported in this regard by Miller (1965).

In a study conducted by Navran (1953), he found that nursing students

who had been in training for two years, had a mean score of 42.0 on

the Nursing scale and twenty-six of the 59 students (44%) had scores in

the B, B-, and C range. Both Navran and Miller suggest that a revision

of the scale be considered on the grounds that the nursing students differ

from the standardization group both with respect to age and "type of person and that the nursing profession has become more complex and proliferated.

WITHDRAWALS VS. THOSE WHO REMAIN IN TRAINING

Numerous studies have been conducted in an attempt to define aptitude, intellectual, interest and personality characteristics required for nursing, by comparing those who withdrew from training with those who remained in the School of Nursing. The following studies comprise the comparison of such groups.

Berg (1947) found those who left training, scored significantly lower on tests designed to measure scholastic and nursing aptitude. In 1952, Healy and Borg, (Guilford Martin Temperament Survey and the Kuder Preference Record) expressed findings in percentages and found that drop outs received undesirable scores on nervousness, cycloid tendencies, rhathymia, objectivity, and co-operation, suggesting that the lack of these characteristics is important for success in nursing.

Beaver (1956) found that the intelligence test (American Council on Education Psychological Examination) scores were the best predictors of success, the Minnesota Multiphasic Personality Inventory scores were almost identical, and the differences on the Literary, Social Service, and Clerical scales of the Kuder Preference Record approached significance.

Spaney (1953) found relatively small correlations between scores on the Personal Audit and Interest-Values Inventory and ratings on eleven traits. The best predictors of survival were found to be

"relations with Co-workers and Supervisors, Manual Dexterity, and
Emotional Maturity".

Kibrick (1963) noted that the students who withdrew "resented
authority and were less willing to submit to routines, desired independ-
ence, were self-centered, rejecting of classmates, less concerned with
patients and less realistic in their approach to nursing".

Reece (1961) using the Edwards Personal Preference Schedule
(E.P.P.S.), described those who successfully completed nursing training
as having "need to take care of others, to be sympathetic and encouraging
to others, liking novelty and change, need friendship, and to please and
win affection, tend to feel inferior and timid, willingly submit to
authority and are conventional". Students who withdrew were character-
ized as having "a greater need for achievement and less need for deference,
appear more aggressively motivated, more self concerned, greater need
to dominate, unable to tolerate much pressure, less need to be orderly
and less need to take care of others". In 1965, Smith, employing the
Cattell 16 P.F. test and the E.P.P.S., found relative differences between
the two groups. Successful students were described as being better
adjusted and more interested in enduring and persevering.

Crider (1943) and Dorffeld, Ray and Baumberger (1948) were
unable to differentiate between drop outs and successful students on the
basis of scores obtained on the Strong Vocational Interest Blank Nursing
scale. This lack of relationship was considered as possibly being related
to attempts to make a good impression and thereby, faking good on the
test.

Although the consensus of opinion has been that personality and interest are important in nursing, empirical attempts to relate personality and interest test scores to criterion of success in nursing have been disappointing. Smith (1965) has offered some explanations which may account for this lack of success. Not only has there been a dearth of cross validation studies, but investigators have used a wide variety of tests and criteria which make comparisons difficult. According to Taylor et al (1963), the "success" criteria used in order of frequency are grades, state board examinations, survival in school, ratings and job performance. It appears then, that research has emphasized academic oriented criteria rather than success as a nurse. The above authors suggested that techniques such as factor analysis, critical incident technique, job analysis, and situational tests should be explored and may prove useful in developing criteria for professional nursing in general and for specific clinical areas in nursing.

COMPARISON OF NURSES WITH OTHER PROFESSIONS

Further investigations to determine the characteristics of nurses have been conducted by comparing nurses or students in nursing with those employed or studying other professional fields.

Elwood (1927) found nurses more "stable" than 77% of the Arts students studied. In 1947, Lough compared Minnesota Multiphasic Personality Inventory scores of four groups of students - Nursing, Arts, Music and Elementary Teachers. Although the differences between the groups were not statistically significant, he found the nursing students to be

"more masculine in their interests, more stable and unemotional".
Ravitz (1955) comparing students in Nursing and Arts, noted differences
between the two groups in occupational values, expectation of occupation-
al satisfaction, occupational attitudes of family and peers and socio-
economic factors.

Beaver (1953, 1955, 1956) compared nursing students with
Education majors and on the basis of her findings, described the student
nurse as being "emotionally stable, interested in science and detailed
work, relatively submissive and possessing serious and idealistic attitudes".

In 1957, Navran and Stauffacher found psychiatric nurses
differed significantly from "women in general" on certain need scales of
the Edwards Personal Preference Schedule and subsequently described the
psychiatric nurse as being "well-organized, co-operative, and serves
others patiently but with impersonal competence." However, further
analysis of the test results indicated that those rated as the "best"
psychiatric nurses were "relatively less timid and more warm in inter-
personal relationships, more stable and more capable of leadership" than
the less highly rated nurses.

Reece (1961) described successful student nurses as being
more submissive, deferent, persistent and nurturant when compared to
college women Edwards Personal Preference Schedule scores.

Triggs (1947) and Womer and Furst (1955) using nurses and
nursing student respectively, found that when compared to women-in-general,
nurses scored significantly higher on the Social Service and Scientific
scales of the Kuder Preference Record.

Attempts to define a specific personality pattern for nurses is rendered more difficult by the findings of the following studies which were designed to determine whether or not personality differences exist between nurses employed in specialized fields of nursing.

Miller (1965) attempted to study this problem by comparing California Psychological Inventory scores obtained from four groups of nurses - Medical-Surgical, Public Health, Maternal-Child, and Psychiatric. Significant differences were found which allowed for a tentative description of nurses with each of the areas of specialization. Lentz and Michaels (1965) questioned the grouping of Medical and Surgical nurses on the basis that differences in personality characteristics existed between the two groups. A study of two such groups of graduate nurses indicated that the Medical nurses were more "people-oriented" and rated more highly on nurse-patient relations, whereas the nurses employed in the Surgical area, were more interested in nursing technique and scored higher on technical skills.

The problem of defining a specific set of personality characteristics is further complicated by the variety of nursing training programs offered.

Brooks (1960) studied the differences in attitude between students enrolled in diploma, associate degree and baccalaureate school of nursing. Differences between the three groups were not significant on "Humanitarianism", but were significant on "Stereotypes". All three groups scored higher than normal on "Authoritarianism" with Associate degree students scoring significantly lower than the remaining two groups. Comparison of the amount of change in attitude after one academic year

indicated significant changes in the direction of non-authoritarianism and a significant difference in stereotypes.

This study poses the problem of the effect of education on personality, Wessell and Flaherty (1964) administered the California Psychological Inventory to 156 female college students at the beginning and at the end of their freshman year. The following scales were found to be significantly higher after one year in college - Cs (Capacity for Status), Sp (Social presence) Sa (Self acceptance) and Ai (Achievement by Independence). On the other hand, scores for Wb (Sense of Well-being), So (Socialization), Cm (Communality), and Fe (Femininity) showed a significant decrease after one year of exposure to college setting.

Relatively little has been published concerning the change in the various traits with a second administration of the test. Gough (1957) reported a reliability study, conducted on 125 female high school students, in which the California Psychological Inventory was administered to the students during their junior year and readministered one year later. Correlations ranged from .44 to .77 and Gough suggests these results "may reflect in part the differing rates of maturation among these adolescents during the year between testings".

Schaie (1959) studied the effect of age differences on the scores of a shortened form of the social responsibility scale((Re)-Responsibility,developed by Gough) and its relationship to measures of intelligence and rigidity-flexibility. Five hundred subjects ranging in age from 20 - 70 were divided into 10 - five year age intervals. The mean scores for these intervals showed a statistically significant trend to increase

until the middle fifties. The mean difference in raw score points between the lowest (20-25) and highest (51-55) subgroups was only four points suggesting that the statistically significant age difference may be of questionable practical significance.

ESTIMATED AND MEASURED INTERESTS

Various studies have investigated the relationship between measured and estimated interests, the results of which vary depending upon the sample, the test used and the method employed for eliciting and classifying expressed interests.

Crosby and Winsor (1941), Kopp and Tussing (1947), and Rose (1948) employed the Kuder Preference Record and reported correlations ranging from .35 to .61 between estimated and achieved interest scores. Berdie (1950) found that scores on the Kuder Preference Record tended to have a closer relationship to self ratings of interest than did the Strong Vocational Interest Blank (median contingency coefficient - Strong and self rating = .43, Kuder and self rating = .52).

In 1941, Bedell noted that female student teachers tended to overestimate their interests as measured by the S.V.I.B. Moffie (1942), using the S.V.I.B., compared six groups of technical students and found correlations from -.07 to +.47 between estimated and achieved interests.

Sinnette (1956) examined the discrepancy between measured and expressed interests in terms of realistic perception of occupational demands, and found that temporal order of understanding of a vocation and complexity of a vocation, significantly related to realism of vocational interest when the S.V.I.B. was used as the criterion of realistic

vocational interest.

Norrell and Grater (1960), using the discrepancy between measured and expressed interest as an indication of the level of "self-awareness", hypothesized that those whose estimated vocational interests are not commensurate with measured interests should have psychological needs limiting "self-awareness". They found that those who were most accurate in predicting interest scores on the S.V.I.B., thereby indicating "high" awareness, scored significantly lower on the Edwards Personal Preference Schedules need scales "Succorance" and "Order".

CHAPTER III

METHOD

SUBJECTS

The subjects employed for the study consisted of the
total population of third year (N_3= 110) and first year (N_1= 124)
female student nurses training in a three year diploma course during
the 1962-63 academic year at the Royal Alexandra Hospital School of
Nursing, in Edmonton, Alberta, Canada. The mean age of the third
year group was 20.65 and for the first year group 18.69. The two
groups differed in regard to the minimum academic standards required
for admittance to the School of Nursing*. High School averages for
third year and first year students were 58.68 and 59.70 respectively.

Some mention should be made of the group of students
enrolled in the R.A.H. School of Nursing during 1960 (third year
group).

Table 1 indicates that 27 of the original students left
training; 23 (85%) of which did so within the first year of training.
These results support those of Spaney (1953), who noted that the
majority of students leave within that period of time.

It is considered possible that the reasons listed do not
represent discrete categories - for example, academic failure may
be related to intellectual ability, lack of interest in nursing or

*Matriculation requirements of students admitted to the R.A.H. School
of Nursing in 1960: Grade XII English, Social Studies and a Science,
with an overall average of 50%.

Matriculation requirements of students admitted to the R.A.H. School
of Nursing in 1962: Grade XII English, Social Studies, a Science and
one option (not specified) and an overall average of 55%.

dislike of nursing. Although the main single reason for withdrawal was "academic failure" (37%), a higher percentage (63%) of drop outs were due to non-academic reasons. "Dislike of nursing" accounted for 26% of the total withdrawals.

Of the total number of students (137) who commenced training in 1960, 19.7% withdrew before completing their studies. This figure corresponds closely to that given for the year in all Schools of Nursing in the Province of Alberta* (19.83%) and falls slightly below the national average (20.6%)*

TABLE 1

REASONS FOR DROP OUTS IN THE ROYAL ALEXANDRA HOSPITAL SCHOOL OF NURSING FOR STUDENTS ADMITTED TO TRAINING IN 1960. N = 27.

REASONS	WITHIN FIRST YEAR OF TRAINING	AFTER FIRST YEAR OF TRAINING
Academic Failure	10 (37%)	-
Personal		
1. Dislike of Nursing	7 (26%)	-
2. Marriage	2 (7%)	3 (11%)
3. Other	4 (15%)	1 (4%)
Total	23 (85%)	4 (15%)

It would appear then that, in comparison with first year group in which potential drop outs are included, the third year students

* Survey of the Schools of Nursing in the Province of Alberta, 1963.

may be regarded as a more select group and presumably should possess,

to a greater degree, those qualities which are considered as being

characteristic of a "good" nurse.

THE TESTS

As it was deemed desirable to obtain a comprehensive

picture of the student nurse, tests were selected which purportedly

measure personality, intellectual, and interest variables. Due to

the large number of subjects to be tested, self-administering, group

paper and pencil tests were chosen.

Personality - California Psychological Inventory (C.P.I.)

Designed (Gough 1957) to evaluate "positive aspects of

personality" which are "important for social living and social inter-

action", and that have "wide and pervasive application to human

behaviour", the C.P.I. is a self administering, 480 item, True-False

response, personality inventory. Each ot its 18 scales yields a

presumably meaningful set of standard scores, thus providing a

profile representing the personality pattern of the individual. For

complete listing of scales and explanation of abbreviations, see

Appendix 1.

Scale construction was based on an "empirical technique"

whereby, prepared inventory statements, designed to measure a previously

defined criterion dimension, were administered to persons considered

as strongly characterized by the trait.

Some investigators have questioned Gough's rational grouping

of the scales into four classes and have conducted factor analytic

studies in order to test the validity of the groupings.

Crites et al (1961) found some support for the first two classes of the C.P.I. but less evidence for the remaining two classes.

Mitchell and Pierce-Jones (1960) extracted four factors from the C.P.I. intercorrelation matrix: Adjustment by Social Conformity (Sc, Gi, Ac, Wb, To, and Re), Social Poise or Extroversion (Do, Cs, Sy, Sp, Sa), Super ego strength (Re, Cm, So, Fe), Capacity for Independent Thought and Action (To, Ie, Cs, Fx, Sp).

A recent second factor analysis of the C.P.I. by Mitchell (1963) resulted in five second order factors which were also found to underlie Cattell's 16 P.F. test. These were: General Adjustment (Wb, Sc, To, Gi Ac). Extroversion (Do, Cs, Sy, Sp, Sa), Intellectual Resourcefulness (To, Ai, Ie, Re, Py), Emotional Sensitivity (-Fe) and Super ego strength (So, -Fe).

It appeared that this test would be suitable for measuring personality characteristics required by nurses. The manual provides female norms for a number of academic and occupational groups including Nursing.

Intelligence - V.I.C.S.

The V.I.C.S. consists of four verbal subtests, Vocabulary, Information, Comprehension, and Similarities, extracted from the Wechsler-Bellevue Intelligence scale Form 1 (Wechsler-1939). It is self-administered and thus can be taken in a group. On the Information subtest, four of the original questions had been replaced by comparable questions which are considered as Canadian-oriented (see Appendix 2).

Instructions are printed on the covering page of the booklet and were read aloud to the subjects when administered. The subtests were scored according to manual instructions. The weighted scores were totalled and pro-rated to yield a weighted Verbal I.Q. score. Conversion to Verbal I.Q. according to the age of the subject, was made by using Wechsler's I.Q. table (1944).

Many attempts have been made to establish "short forms" for the Wechsler-Bellevue Form 1, and have consisted of what was considered as the "best" pairs, triads, quartets and quintets. The rationale for this approach, aside from the reduction in time required to administer the entire scale, has been that the various combinations of subtests yield correlations with the Full Scale of sufficiently high order to be used as substitutions for it. In general, the majority of the various "best" combinations consisted of subtests extracted from both the Verbal and Performance areas. Aside from the study conducted by Aldridge (1961), no other research study was located which utilized the particular combination of subtests employed in the present study. Wechsler (1958) remarks that short forms may be useful for screening purposes but recommends that in order to understand the "global function-ing" of the individual, the Wechsler-Bellevue should be regarded as a "minimal rather than a maximal battery", and that "not fewer but more tests are needed".

Interest - Strong Vocational Interest Blank - Womens Form - Strong (1959)
S.V.I.B.

This paper and pencil group test contains 400 items listing occupations, school subjects, hobbies, kinds of people etc., to which

persons respond by selecting one of Like, Dislike, or Indifference
as the answer to an item. An individual's responses are then compared
with the known responses of persons who have been successful in the
twenty-nine separate occupations.

The test was constructed using an empirical technique. Test
items were administered to the criterion groups and the responses of
each group were compared with "women-in-general". Analysis of responses
resulted in a weighting of the items depending upon the degree to which
they differentiated an occupational group from the general group.

In the present study, main interest was centered upon the
Nursing scale. For general interest and comparison, scores on the
Social Worker, Elementary Teacher, and Physician scales were also
calculated.

COLLECTION OF THE DATA

Students were notified of the testing project by the Assistant
Director of the School of Nursing and were assured that the results
would be confidential and in no way affect the students standing in
the school.

Due to the difficulty encountered in assembling students,
testing was conducted over a period of approximately four months.
Schedules were set up whereby, subgroups from each year would be
available for testing. Each test was administered separately, with
the total testing time consuming approximately two and one-half hours
of each students time. All subjects were administered the intelligence

test (V.I.C.S.), before completing the personality test (C.P.I.) and the interest test (S.V.I.B.). No specific order of administration was maintained for the latter tests.

Prior to answering the interest test, the students were presented with a mimeographed copy of the S.V.I.B. profile. The purpose of the test and the scoring (in terms of letter grades and numbers) were explained in detail by the test administrator. The students were then requested to consider each occupation separately and to estimate how their interests would compare to the interests of people in the various occupations listed. For the purpose of this study, only the estimated scores on the Nursing scale will be utilized.

In addition, nursing educators within the Royal Alexandra Hospital School of Nursing were requested to collectively rate each of the third year and first year student nurses, on the basis of overall suitability and proficiency. Subsequently, groups comprising "high" and "low" rated students were compared on psychological and biographical variables.

Records on each student were made available so that calculations of Grade XII average, number of Grade XII supplemental examination, and the average of the most recent examination marks within the School of Nursing, could be made.

STATISTICAL ANALYSIS

The means and standard deviations of test variables and biographical data were obtained via computer. The identification of variables providing significant discrimination between third and first

year student nurses and also between those rated "high" and "low" within each year was affected by calculation of "t" ratios. A one-tailed test of significance was employed on those variables where prediction was made (C.P.I. scales - Re (Responsibility), So (Social-ization), Sc (Self-control), and To (Tolerance), Verbal I.Q. and Information subtest of the V.I.C.S., and Estimate score of interest on the Nursing scale of the S.V.I.B.). On the remaining variables, a two-tailed test of significance was used as no prediction was made regarding the differences between the two groups.

Further analysis of the data was made under Part A, D, and E, which necessitated the conversion of raw scores on ten C.P.I. scales to standard score form (Gough, 1957, p. 38 - 39). Means and standard deviations of combined standard scores on specific C.P.I. scales were calculated for third and first year student nurses, and for "high" and "low" rated groups within each year. The degree of significance of the difference between the means was tested by the calculation of "t" ratios using a one-tailed test of significance.

In order to avoid negative numbers, a constant of 10 was added to the difference between the estimated and the achieved standard scores on the Nursing scale of the S.V.I.B. "Estimate" score was obtained by calculating for each student; Estimated score - Achieved score + 10.

CHAPTER IV

RESULTS

PSYCHOLOGICAL DISCRIMINATION OF THIRD YEAR AND FIRST YEAR STUDENT
NURSES

The means and standard deviations of biographical data and
test variables and "t" scores associated with differences between
means for third and first year nursing students are listed in
Tables II to VI. See appendix for interpretation of abbreviations.
Results for each Table will be reported separately.

TABLE II

CONTRAST OF BIOGRAPHICAL DATA BETWEEN THIRD AND
FIRST YEAR STUDENT NURSES

$N_3 = 110$ $N_1 = 124$

Biographical Data	Third Year		First Year		
	$\bar{X}_3$	$S.D._3$	$\bar{X}_1$	$S.D._1$	t
Age	20.65	1.01	18.69	.77	17.82***
Grade XII Average	58.68	6.86	59.70	5.81	1.23
Number of Grade XII Supplemental Examinations	1.72	2.25	2.40	2.56	2.13*
Nursing Average	74.61	5.35	74.47	8.99	.14

* p less than .05   ** p less than .01   ***p less than .001

Table II indicates the two groups did not differ significantly
in Grade XII average. The first year students had written significantly

more supplemental examinations during Grade XII than the third year
students. The difference in age between the two groups is highly
significant (p less than .001 level).

Part A   Personality

As indicated in Table III, third year students scored signi-
ficantly higher than the first year students on nine of the eighteen
C.P.I. scales - Cs (Capacity for Status), Sy (Sociability), Sp (Social
Presence), Sa (Self-acceptance), To (Tolerance), Sc (Self-control),
Ai (Achievement via Independence), Ie (Intellectual efficiency), and
Py (Psychological-mindedness). Comparison between the two groups is
facilitated by inspection of Figure 1.

Comparison of these scales with the second order factors
found by Mitchell (1963) indicated that eight of these scales (all
but Sc) closely corresponded to two factors "Extroversion" (Do, Cs,
Sy, Sp, Sa) and "Intellectual Resourcefulness" (Re, To, Ai, Ie, Py).
This finding suggested that these two factors may be important for
success in nursing. Therefore, further analysis of the data was
conducted in order to determine the effectiveness of the combined
scores on the scales considered as constituting measures of these
two factors, in differentiating between third and first year student
nurses. Raw scores obtained by each student on these ten scales were
converted to standard scores.

TABLE III

CONTRAST OF C.P.I. MEANS FOR THIRD AND FIRST YEAR
STUDENT NURSES

$N_3 = 110 \qquad N_1 = 124$

Variable	Third Year $\bar{X}_3$	s.d $_3$	First Year $\bar{X}_1$	s.d.$_1$	t
Do	23.84	5.49	23.49	5.90	.47
Cs	19.27	3.55	18.06	4.24	2.42*
Sy	24.25	4.49	22.46	5.47	2.75**
Sp	35.05	5.69	32.44	6.29	3.35***
Sa	21.74	3.21	20.44	3.90	2.83**
Wb	35.71	5.52	34.67	5.52	1.44
Re	29.29	4.52	29.52	4.10	.41
So	39.38	6.13	39.52	4.88	.19
Sc	28.04	7.24	25.94	7.85	2.14*
To	22.35	4.87	20.44	5.17	2.94**
Gi	15.55	5.38	15.24	6.01	.46
Cm	26.11	2.22	26.31	1.37	.83
Ac	25.55	4.16	24.79	4.58	1.33
Ai	19.43	3.63	19.29	3.96	2.32*
Ie	38.80	5.50	36.23	5.42	3.62***
Py	10.40	2.48	9.40	2.52	3.13**
Fx	9.69	3.59	9.65	3.24	.09
Fe	23.83	3.30	23.81	3.61	.04

*p less than .05   ** p less than .01   *** p less than .001

PROFILE SHEET FOR THE *California Psychological Inventory*: FEMALE

Name _____ Age _____ Date Tested _____

Other Information _____

Figure 1

California Psychological Inventory – Third and
First Year Group Mean Profiles

Notes:

_____ Third Year

------------First Year

FEMALE NORMS

Standard Scores

Female Norms

TABLE IV

CONTRAST OF MEAN STANDARD SCORES ON "EXTROVERSION"
AND "INTELLECTUAL RESOURCEFULNESS" FOR THIRD
AND FIRST YEAR STUDENT NURSES N_3= 110 N_1= 124

| "Factor" | Third Year | | First Year | | |
	X_3	$S.D._3$	X_1	$S.D._1$	t
"Extroversion"	49.66	10.20	46.37	11.52	2.33**
"Intellectual Resourcefulness"	48.11	10.56	45.12	10.39	2.23*

* p less than .05   ** p less than .01

Table IV indicates that the summation of standard scores on scales constituting what Mitchell considered as measures of "Extroversion and Intellectual Resourcefulness" results in a significant difference between the two groups on both factors.

Part B - Intelligence

As indicated in Table V. first year students scored significantly higher ($\bar{X}_1$ = 113.73) on the V.I.C.S. Verbal I.Q. than did third year students ($\bar{X}_3$ = 111.71). Standard deviation values of 7.25 and 11.51 respectively, indicates a wider variation in intellectual ability within the third year group.

TABLE V

CONTRAST OF V.I.C.S. MEANS FOR THIRD AND FIRST YEAR
STUDENT NURSES

N_3 = 110 N_1 = 124

| Variable | Third Year | | First Year | | |
	$\bar{X}_3$	S.D.$_3$	$\bar{X}_1$	S.D.$_1$	t
Verbal I.Q.	111.71	11.51	113.73	7.25	1.65*
Information	10.55	1.47	10.98	1.55	2.26*
Comprehension	12.38	1.81	11.85	1.76	2.30*
Similarities	12.09	2.11	12.45	2.03	1.33
Vocabulary	10.86	1.41	10.69	1.52	.89

* p less than .05

The third year group scored significantly higher than first year students on the Comprehension and Information subtests of the V.I.C.S.

Part C - Interest

Examination of results as given in Table VI indicates that the third year student nurses scored significantly higher on the Nursing Scale of the S.V.I.B. ($\bar{X}_3$ = 42.17, B+ range), thus indicating their measured interests are more like those employed in Nursing than are those of the first year students ($\bar{X}_1$ = 37.86, B range)

TABLE VI

CONTRAST OF S.V.I.B. MEANS FOR THIRD AND FIRST YEAR

STUDENT NURSES

$N_3 = 110$ $N_1 = 124$

Variable	Third Year $\bar{X}_3$	S.D.$_3$	First Year $\bar{X}_1$	S.D.$_1$	t
Nursing	42.17	9.70	37.86	9.89	3.48***
Estimate	34.31	12.01	40.84	11.37	4.32***
Social Worker	28.26	8.86	27.08	9.52	.98
Elementary Teacher	33.05	8.91	34.19	10.46	.93
Physician	26.97	8.51	25.70	9.52	1.11

*** p less than .001

In general, most students tended to overestimate their interest in Nursing. However, third year students achieved a significantly lower score on "Estimate" ($\bar{X}_3 = 34.31$) than did first year students ($\bar{X}_1 = 40.84$) indicating there was less discrepancy between estimated and achieved scores for the third year group.

Comparison of the two group mean scores on the Nursing scale with those listed in the S.V.I.B. manual for "women-in-general" ($\bar{X} = 29.4$ s.d. 12.6) and Nurses ($\bar{X} = 62.9$ s.d. = 22.0), indicated that both groups score higher than "women-in-general", with third year students bearing more resemblance to Nurses than do the first year students.

The difference between the two groups on the three other

S.V.I.B. scales, Social Worker, Elementary Teacher and Physician was not significant.

Table VII indicates that in both groups of students, interests in Nursing as measured by the S.V.I.B. encompasses all possible ranges within the occupational profile. A greater percentage of third year students have interests falling within A, B+, and B categories and less in the lower interest categories B-, C+, and C., than do first year students.

TABLE VII

FREQUENCY DISTRIBUTION AND % OF THIRD AND FIRST YEAR
STUDENTS NURSING SCORES IN RELATION TO S.V.I.B.
PROFICLE CATEGORIES N_3= 110 N_1= 124

	A 45 - 70	B+ 40 - 44	B 35 - 39	B- 30 - 34	C+ 25 - 29	C up to 24
Third year	47(43%)	22(20%)	17(16%)	11(10%)	7 (6%)	6 (5%)
First year	32(26%)	28(23%)	23(19%)	19(15%)	8 (6%)	14(11%)
Total	79(34%)	50(21%)	40(17%)	30(13%)	15(6%)	20(9%)

Considering both years (N_1= 234), 28% have measured interests which appear to bear limited resemblance to those engaged in the Nursing profession.

TABLE VIII

CONTRAST OF BIOGRAPHICAL DATA AND TEST VARIABLE MEANS

FOR "HIGH" RATED AND "LOW" RATED

THIRD YEAR STUDENT NURSES

$N_H = 19$ $N_L = 16$

Variable	High-Rated		Low-Rated		
	X_H	s.d.$_H$	X_L	s.d.$_L$	t
Biographical Data					
Age	20.63	.68	20.75	1.13	.38
Grade XII Average	58.79	7.15	56.13	7.77	1.05
No. Grade XII supplemental examinations	1.26	1.48	3.69	3.89	2.36*
Nursing Average	77.16	5.11	71.00	5.33	3.54**
California Psychological Inventory					
Do	24.58	4.54	23.31	4.48	.84
Cs	20.21	2.41	17.19	4.26	2.31*
Sy	25.53	4.72	23.56	4.91	1.22
Sp	35.26	5.48	32.31	5.74	1.59
Sa	22.11	3.26	20.56	3.01	1.46
Wb	36.21	7.37	35.50	4.77	.34
Re	30.53	3.75	28.88	5.16	1.08
So	41.84	6.13	39.63	4.95	1.20
Sc	30.37	6.53	26.87	6.99	1.52
To	24.16	4.59	19.56	5.92	2.54*
Gi	18.32	5.77	14.31	5.51	2.11*
Cm	25.79	2.78	26.75	1.57	1.29
Ac	27.21	2.24	25.25	3.73	1.70
Ai	20.37	4.22	17.50	3.65	2.19*
Ie	40.42	5.45	35.63	5.19	2.66*
Py	11.05	1.87	10.06	1.98	1.52
Fx	8.95	4.21	9.00	3.31	.04
Fe	23.53	3.45	25.06	3.57	1.33

TABLE VIII - CONTRAST OF BIOGRAPHICAL DATA AND TEST VARIABLE MEANS (CONTINUED)

Variable	High-Rated		Low-Rated		
	X_H	$s.d._H$	X_L	$s.d._L$	t
V.I.C.S.					
Information	10.68	1.34	10.63	1.50	.10
Comprehension	12.63	1.34	11.75	1.91	1.57
Similarities	11.58	2.04	10.81	2.32	1.04
Vocabulary	10.95	1.43	10.25	1.48	1.43
Verbal I.Q.	112.53	6.35	109.25	7.33	1.41
S.V.I.B.					
Nursing	43.16	5.80	41.63	11.68	.49
Estimate	34.00	11.09	34.75	11.60	.19

* p less than .05   ** p less than .01

Part D   PSYCHOLOGICAL DISCRIMINATION OF HIGH RATED AND LOW
          RATED THIRD YEAR STUDENT NURSES

The means and standard deviations of biographical data and
test variables and "t" scores associated with differences between
means for high and low rated third year nursing students are listed
in Table VIII. See Appendix for interpretation of abbreviations.

As indicated in Table VIII, the high rated third year
group had written significantly fewer Grade XII supplemental
examinations and had achieved significantly higher marks in their
Nursing courses.

Differences on the intelligence test (V.I.C.S.) were not
statistically significant.

No significant differences were found between mean scores on
the Nursing scale of the S.V.I.B. The mean score for both groups
fell within B+ range. Differences between the two groups in their
ability to estimate their interest in Nursing was not demonstrated.

The high rated group achieved significantly higher scores
on five C.P.I. scales - Cs (Capacity for Status), To (Tolerance),
Gi (Good Impression), Ai (Achievement via Independence), and Ie
(Intellectual Efficiency). Figure 2 allows comparisons of high
and low rated C.P.I. group means.

Figure 2

California Psychological Inventory - Third Year
High and Low Rated Group Mean Profiles

_____ High Rated

------------Low Rated

PROFILE SHEET FOR THE *California Psychological Inventory*: FEMALE

TABLE IX

CONTRAST OF MEAN STANDARD SCORES ON "EXTROVERSION"

AND "INTELLECTUAL RESOURCEFULNESS" FOR HIGH

AND LOW RATED THIRD YEAR STUDENT NURSES

$N_H = 19$ $N_L = 16$

Factor	High Rated X_H	s.d.$_H$	Low Rated X_L	s.d.$_L$	t
"Extroversion"	51.36	9.60	46.46	10.13	1.48
"Intellectual Resourcefulness"	51.22	9.63	44.30	10.35	2.03*

*$\underline{p}$ less than .05

        As in Part A, further calculations were made to determine the effectiveness of the combined standard scores on scales considered by Mitchell (1963) as constituting measures of what he terms "Extroversion" and "Intellectual Resourcefulness", in differentiating between those students rated high and those rated low. Table IX indicates a significant difference between the two groups on the "Intellectual Resourcefulness" factor.

TABLE X

CONTRAST OF BIOGRAPHICAL DATA AND TEST VARIABLE MEANS

FOR "HIGH" RATED AND "LOW" RATED

FIRST YEAR STUDENT NURSES

N_H = 25 $\qquad$ N_L = 20

| Variable | High-Rated | | Low-Rated | | |
	X_H	$S.D._H$	X_L	$S.D._L$	t
Biographical Data					
Age	18.48	.65	18.90	.91	1.75
Grade XII average	63.44	8.34	58.25	4.51	2.69*
No. of Grade XII Supplemental Examinations	1.32	1.91	2.60	2.99	1.66
Nursing Average	80.36	4.75	74.09	4.93	4.38***
California Psychological Inventory					
Do	24.00	4.17	22.15	5.79	1.22
Cs	18.64	4.45	17.00	3.42	1.45
Sy	23.64	4.75	21.90	5.51	1.12
Sp	32.76	5.73	32.35	4.97	.26
Sa	20.12	3.76	19.85	3.23	.26
Wb	36.36	3.75	35.85	4.02	.45
Re	30.96	2.91	29.45	4.45	.72
So	41.56	4.22	40.05	3.62	1.34
Sc	28.68	7.48	26.95	5.78	.89
To	22.44	3.38	20.15	4.89	1.91
Gi	16.12	5.38	15.80	5.41	.19
Cm	26.88	1.01	26.75	1.12	.41
Ac	26.68	3.70	25.10	3.82	1.42
Ai	18.84	3.53	18.70	4.99	.11
Ie	38.68	4.11	36.45	5.49	1.55
Py	9.92	2.14	9.69	2.64	.32
Fx	9.56	3.15	9.15	3.59	.40
Fe	23.48	3.16	24.65	3.31	1.20

TABLE X - CONTRAST OF BIOGTAPHICAL DATA AND TEST VARIABLE MEANS - CONTINUED.

| Variable | High-Rated | | Low-Rated | | |
	$\bar{X}_H$	$S.D._H$	$\bar{X}_L$	$S.D._L$	t
V.I.C.S.					
Information	11.36	.95	10.55	1.36	2.31*
Comprehension	12.48	1.71	11.85	2.06	1.11
Similarities	12.84	1.88	12.00	2.00	1.45
Vocabulary	11.04	1.24	10.60	1.47	1.07
Verbal I.Q.	116.48	5.64	112.00	7.06	2.35*
S.V.I.B.					
Nursing	40.96	8.03	40.90	6.88	.03
Estimate	41.60	8.24	37.85	9.29	1.43

* p less than .05   *** p less than .001

Part E PSYCHOLOGICAL DISCRIMINATION OF HIGH RATED AND LOW
        RATED FIRST YEAR STUDENT NURSES.

The means and standard deviations of biographical data
and test variables and "t" scores associated with differences between
means for high and low rated first year nursing students are listed
in Table X.

As Table X indicates, the high rated group of students
were accredited with a significantly higher Grade XII and nursing
average.

On the V.I.C.S., those rated high attained significantly
higher scores on both the Verbal I.Q. and on the Information subtest.
Differences between the two group means on the remaining subtests,
Comprehension, Similarities and Vocabulary were not significant.

Both groups achieved scores on the S.V.I.B. Nursing scale
which fell within the B+ range. Difference between the two groups
in their ability to estimate their interest in Nursing was not
demonstrated.

No significant differences were found between the two groups
on the eighteen C.P.I. scales. However, the tendency was exhibited for
those rated high to achieve higher scores on every scale. Graphic
representation of C.P.I. means for high and low rated students is shown
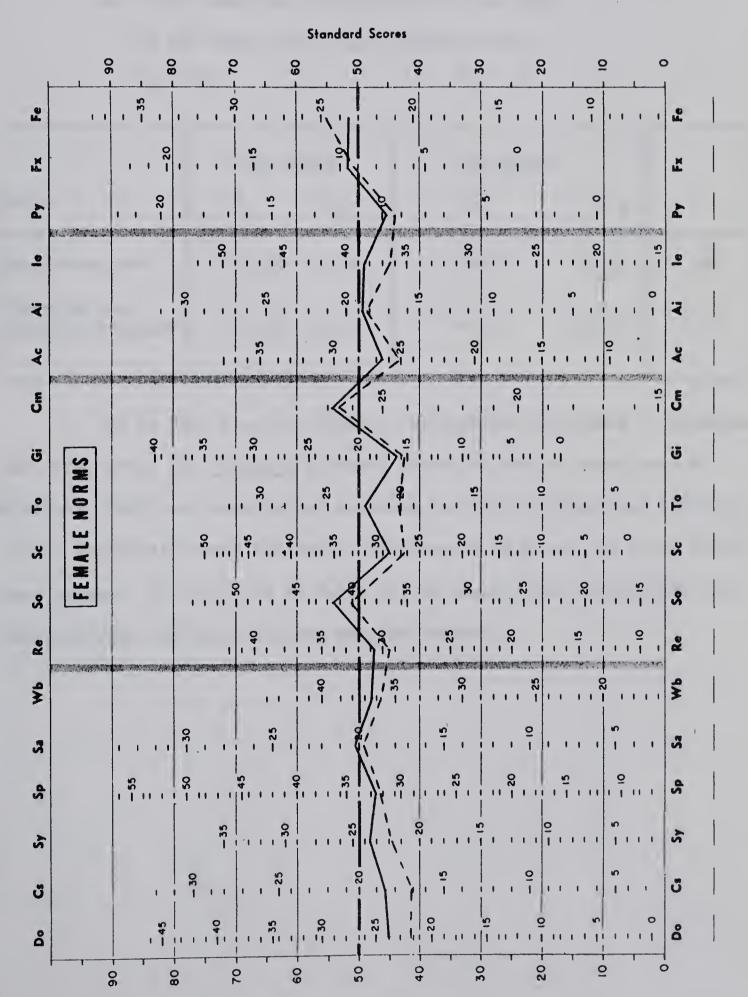in Figure 3.

Figure 3

California Psychological Inventory - First Year High
and Low Rated Group Mean Profile

_____ High Rated

------------Low Rated

Standard Scores

FEMALE NORMS

Female Norms

TABLE XI

CONTRAST OF MEAN STANDARD SCORES ON "EXTROVERSION"

AND "INTELLECTUAL RESOURCEFULNESS" FOR HIGH

AND LOW RATED FIRST YEAR STUDENT NURSES

$N_H = 25$ $N_L = 20$

Factor	High Rated		Low Rated		t
	$\overline{X}_H$	S.D.$_H$	$\overline{X}_L$	S.D.$_L$	
"Extroversion"	47.38	10.14	44.76	10.52	.86
"Intellectual Resourcefulness"	48.38	10.20	45.51	10.58	.92

As in Part A and D, further calculations were made to determine how effectively the combined standard scores on scales considered by Mitchell (1963) as constituting measures on "Extroversion" and "Intellectual Resourcefulness" differentiated between high and low rated first year nurses. As indicated in Table XI, no significant differences were found between the two groups on the two factors.

CHAPTER VI

DISCUSSION

PSYCHOLOGICAL DESCRIPTION OF THIRD YEAR AND FIRST YEAR STUDENT NURSES

Considering the third year students as a more select group, that is, drop outs have occurred, the mean Grade XII average for this group falls below the level of the first year students, in which potential drop outs are included. This difference is considered as possibly being related to the change, within the two year period, in minimum academic standing required by the Royal Alexandra Hospital School of Nursing for entrance into nursing training. The first year students had written significantly more Grade XII supplemental examinations than had the third year group.

It is important to note that the difference in age between the two groups is significant. To what extent the differences found on the numerous variables measured can be attributed to age alone, is difficult to assess. Differences may have existed because of a natural developmental process, have been influenced by exposure to nursing training, or constitute a basic difference between the two groups on the variables measured by the three group tests.

The study conducted by Schaie (1959) and the reliability study (Gough, 1957) are suggestive of changes in various traits with age.

Part A - Personality

As the test results indicated, Hypothesis 1, which stated that the third year students would score higher than first year group on four C.P.I. scales - Re(Responsibility), So (Socialization), Sc (Self-control) and To (Tolerance) was not completely confirmed. The mean scores on two of the four scales (To and Sc but not Re and So) were significantly different in the expected direction.

Within Class 1 of the C.P.I., which is designed to measure Poise, Ascendancy and Self assurance, significant differences were found between the two groups on four of the six scales - Cs (Capacity for Status), Sy (Sociability), Sp (Social Presence) and Sa (Self-acceptance). One might infer from these results that, the third year students may be characterized as being somewhat more forceful, resourceful, outgoing, self-confident, and self-accepting.

Two of the scales, Sc (Self-control) and To (Tolerance), within Class 11 of the C.P.I., constituting measure of Socialization, Maturity and Responsibility, were found to differentiate between the two groups of students, suggesting that third year students tend to be more self-controlled and tolerant.

Significant differences between the two groups on Ie (Intellectual Efficiency) and Ai (Achievement by Independence) scales (Class 111 - measures of Achievement Potential and Intellectual Efficiency), are indicative of a tendency on the part of the third year students, to be more independent, self reliant and intellectually efficient than the first year students.

Test results indicated that eight C.P.I. scales (Cs, Sa, Sy, Sp, To, Ai, Ie, and Py), which significantly differentiated between the two groups of student nurses at varying levels of confidence, closely corresponded to two of the second order factors found by Mitchell (1963).

Description in terms of these factors would be that the average third year student possesses more of the qualities related to "intellectual resourcefulness" and "extroversion". This suggests that the possession of these characteristics may be important for success in nursing.

Part B - Intelligence

Although the intellectual ability, as assessed by the V.I.C.S. of both groups of students studied, falls within the Bright Normal range, tests results indicated that, as a group, the first year students are significantly more intelligent than the third year students. This finding was contrary to Hypothesis 2 a, in which the reverse was predicted. These results may be considered as a reflection of the higher academic standards required by the School of Nursing for those currently in their first year of training as compared with those presently engaged in third year.

Significant difference in the expected direction on the mean Information subtest score, supported Part b of Hypothesis 2, in which the prediction was made that the third year students would score lower on this subtest than would the first year students. It may be that

these results lend support to the idea proposed by Aldridge (1961) who suggested that, within the School of Nursing, abilities as measured by this test, may extinguish over time. However, consideration must be given to the fact that, because of the lower academic requirements during the 1960 selection program, and with comparatively lower intellectual ability, these students might have initially scored lower on this test, thus indicating, not extinction, but the possession of lesser ability as measured by this subtest.

On the Comprehension subtest of the V.I.C.S., which was designed to measure what may be generally termed "social judgment" the third year students scored significantly higher than first year students, indicating the average third year student possesses, to a greater degree, the skills measured by this subtest.

Part C - Interest

Third year students were significantly more accurate in estimating their interest in Nursing. This finding confirms Hypothesis 3, which stated that there would be less discrepancy between estimated and achieved scores on the Nursing scale for third year students than would be demonstrated by the first year group. One may conclude, that as a result of exposure to approximately three years of training, the average third year student possesses a greater understanding and awareness of the nursing profession and therefore is more realistic in her attitudes towards nursing.

The finding that the third year group scored significantly higher than first year students on the Nursing scale of the S.V.I.B.,

indicated that their interests are more like those of nurses engaged
in the profession than are those of the average first year student.
Both groups demonstrated an interest in Nursing which differentiate
them from "women-in-general".

Although it is possible that some of the first year students
scoring within the lower ranges of the Nursing scale may withdraw
before completing training, the third year students may be considered
as having met at least some of the "success" criteria often used in
research studies. That is, they have successfully completed a minimum
of two years of nursing training. Although, one cannot assume that all
third year students will successfully complete the final Registered
Nurses examinations, the relatively high number (N = 24 - 21%) of these
students whose measured interests fall within the lower letter grades
(B-, C+, C), suggests that caution should be used in interpretation
of low scores achieved on this scale and lends support to Navran (1953)
and Miller (1965) suggestion that a revision of the Nursing scale should
be considered.

Part D - Psychological Description of High Rated and Low Rated Third
        Year Student Nurses
_____

Test results indicate that, in general, the low rated group
experienced more difficulty in academic subjects both within the School
of Nursing and in previous Grade XII courses.

The significant differences between the two groups on the
C.P.I. scales - Cs (Capacity for Status), To (Tolerance), Gi (Good
Impression), Ai (Achievement by Independence) and Ie (Intellectual

Efficiency), suggests that the high rated group may be regarded as being more forceful, resourceful, tolerant, concerned with making a good impression, independent and intellectually efficient.

The finding that the mean standard scores on Mitchell's (1963) second order factor "Intellectual Resourcefulness" is significantly higher for those third year students rated high as compared with the low rated groups, suggests the importance of this factor in describing the personal qualities which are considered by nursing educators as being important for nursing.

Intellectual classification of those rated high is Bright Normal as compared with Average intellectual ability of low rated students, although the difference between the two group means was not statistically significant.

The average score of both groups on the Nursing scale of the S.V.I.B. falls with the B+ range. Differentiation between the two groups in terms of ability to estimate their interest in Nursing was not demonstrated.

It would appear that ratings made by nursing educators were influenced to a lesser degree by academic achievement and intellectual ability and tended to reflect differences in personality characteristics between the two groups. This finding suggests that nursing educators consider personality as an important factor in overall suitability and proficiency within the field of nursing.

Part E Psychological Description of High and Low Rated First Year
        Student Nurses

        High rated students had achieved significantly higher Grade XII

and nursing average. It would appear that, at this early stage of train-

ing, personality variables are not too discriminating. Although no

significant differences were found, the tendency of those rated high

to score higher on every scale of the C.P.I. suggests, in Gough's

interpretation, better adequacy in social and interpersonal functioning.

        The mean verbal I.Q. score for both groups falls within the

Bright Normal range of intelligence. However the high rated group

scored significantly higher than did the low rated students, on the

V.I.C.S. Verbal I.Q. and on the Information subtest. These results

suggest that those students rated high possess more adequate intellectual

ability as measured by the V.I.C.S.

        Little difference between the two groups was demonstrated

in the S.V.I.B. scale designed to measure interest in Nursing. Both

groups achieved scores which fell within B+ range. Differences between

the two groups in their ability to estimate their interest in the

nursing profession was not demonstrated.

        The above discussion suggests that, within the first year

of training, nursing educators distinguished the suitable from the

less suitable primarily on the basis of academic achievement and

intellectual ability. Since the students had only recently commenced

training at the time the ratings were made, nursing educators were less

aware of the personality characteristics of the individual student.

CHAPTER VI

SUMMARY AND RECOMMENDATIONS

This study has dealt with determining differences in psychological indices between third and first year female student nurses. Although no comparable studies were located, a review of the research conducted within the nursing profession provided relevant information in reference to the present study.

Three paper and pencil group type tests were administered to 110 third year and 124 first year students engaged in nursing training at the Royal Alexandra Hospital in Edmonton, Alberta, Canada, during the 1962-63 academic year. The tests employed were the California Psychological Inventory, an abbreviated form of the Wechsler-Bellevue Intelligence scale Form 1 (referred to as V.I.C.S.), and the Strong Vocational Interest Blank. In addition, prior to completing the interest test, each student was requested to estimate her interest in the professions listed on the S.V.I.B. profile.

Three hypotheses were advanced in reference to the main purpose of the study and subsequently organized into sections. All hypotheses were concerned with a description of the average third year student as compared with the average first year student in relation to the psychological variables measured by the tests.

The first hypothesis (Part A) stated that "third year students would score higher than first year students on four C.P.I. scales namely - Re (Responsibility), So (Socialization), Sc (Self-control) and To (Tolerance)". The conclusion was reached that the test results

supported only part of the hypothesis in that significant differences were found in the expected direction on two of the scales (Sc and To). On seven other C.P.I. scales Cs (Capacity for Status), Sy (Sociability), Sp (Social presence), Sa (Self acceptance), Ai (Achievement via Independence), Ie (Intellectual Efficiency), and Py (Psychological Mindedness), third year students scored significantly higher than first year students.

Hypothesis 2 (Part B), was related to differences in intellectual ability as measured by the V.I.C.S. and was stated in two parts. In part a, it was predicted that the third year group would achieve a higher Verbal I.Q. score than would the first year group. The test results indicated the reverse to be true, which may be considered as a reflection of the higher academic standards required by those presently engaged in the first year of nursing training. Part b, in which the prediction was made that third year students would score lower on the Information subtest of the V.I.C.S., was confirmed by the results. Because of the somewhat secluded atmosphere experienced by nurses in training, it is possible that abilities, as measured by this subtest, might extinguish over time.

The third hypothesis, (Part C) was concerned with differences between the two groups in their ability to estimate their interest in Nursing as measured by the Strong Vocational Interest Blank. The relevant hypothesis stated that the "third year students would have a more realistic perception of the nursing profession and consequently, there would be less discrepancy between their estimated and achieved

scores on the Nursing scale of the S.V.I.B." This prediction was supported in the test findings, and the results indicate that, the third year students, as a result of longer exposure to nursing training, have a more realistic perception of nursing as a profession, and thus are better able to accurately assess their interest in the profession.

The third year students achieved mean scores on the three tests which would describe the average student as being more forceful, resourceful, self-confident, self accepting, self controlled, tolerant, independent, self reliant, and intellectually efficient. In terms of factors found by Mitchell (1963), the average third year student possess more of the qualities related to "Intellectual Resourcefulness" and "Extroversion", which suggests that these factors may be important for success in nursing. The average third year student was characterized as being of Bright Normal intelligence, having interests in nursing which bear more resemblance to those engaged in the profession and was better able to estimate her interest in this professional field.

In addition to the main purpose of the study, each student was rated on overall suitability and proficiency by the nursing educators at the Royal Alexandra Hospital School of Nursing. Differences on psychological variables as measured by the three group tests were examined and discussed for those students rated "high" and those rated "low" within third year and first year of training.

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The present investigation has been basically of an exploratory nature, the findings of which should be regarded as tentative.

In order to assist the School of Nursing in the selection of nursing trainees, further investigation should be conducted to determine the adequacy of the tests used in this study, to predict success in Nursing, using for practical purposes, the academic criterion of Registered Nurses examinations. It is recognized that the success of any particular test battery will vary from school to school and even from year to year within the same school. This indicates the importance of each School of Nursing conducting a testing program in order to assist in the selection of potential nurses.

However, it is considered that more information, in a broader sense, could be gained by a follow up study to determine how effectively the graduate nurse was functioning within the profession. There appears to be a lack of research directed towards studying the relationship between academic success and on the job success, as well as predictive validity of test variables and on the job success. Future research efforts then, should be directed towards determining how well nursing grades and performance in the School of Nursing and test variables predict on the job success in nursing. This type of study would, perhaps, be of assistance in the counselling and directing of the student nurse if the results obtained were indicative of varying personality types within the numerous areas of nursing specialization.

Another area warranting investigation would be a comparative study between those students presently engaged in first year training who successfully graduate and those who withdraw.

Nursing training is described by Saunders as being a "cloistered"

type of setting. This suggests, that perhaps more than any other type

of educational training, changes in personality may be attributable to

educational factors. Readministration of the California Psychological

Inventory at a later date may provide interesting information regarding

this problem.

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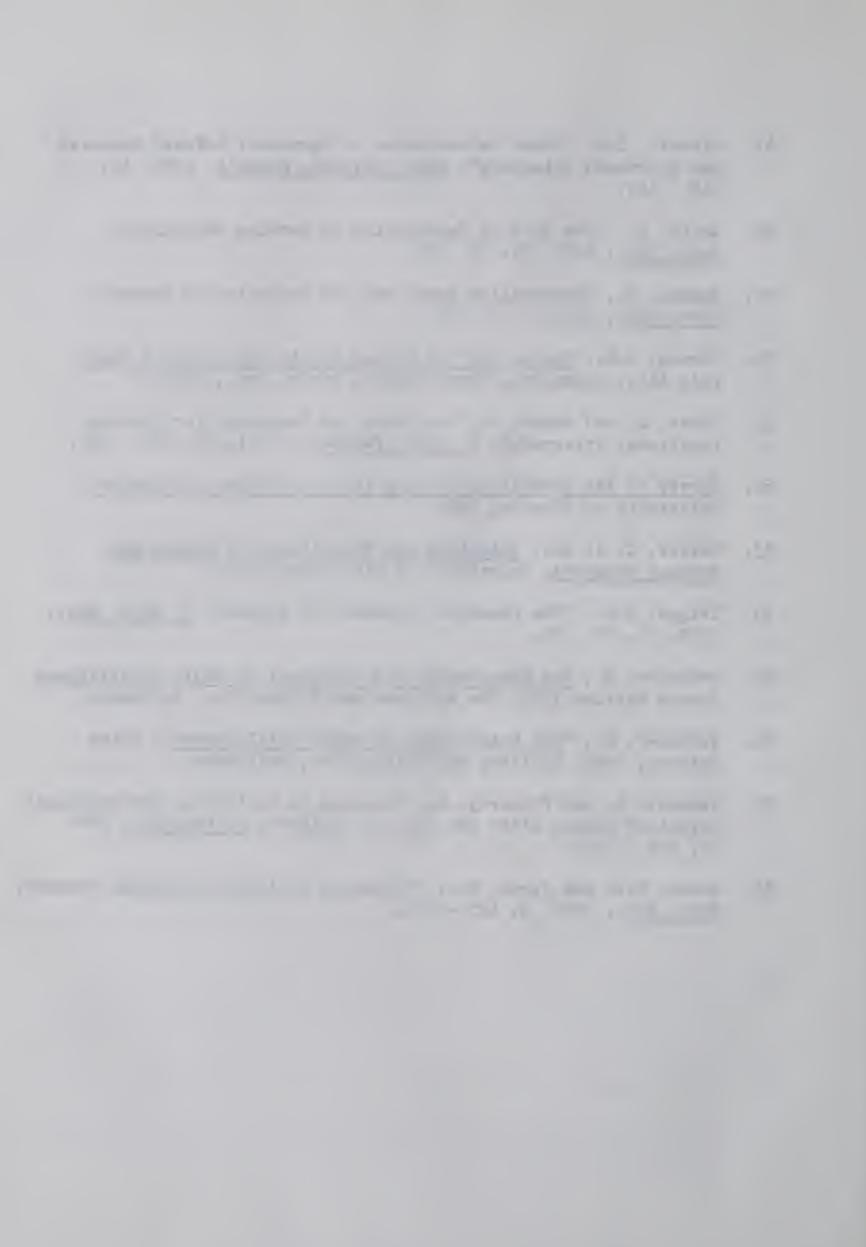30. Miles, C., "The Personality Development of Student Nurses", Amer. J. Nurs., 1934, 34, 175 - 184.

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APPENDICES

Appendix 1.   Full Names for Test Scale Abbreviations

California Psychological Inventory

Abbreviation	Full Name

Class I   Measures of Poise, Ascendancy, and Self-Assurance

Do	Dominance
Cs	Capacity for Status
Sy	Sociability
Sp	Social Presence
Sa	Self Acceptance
Wb	Sense of Well-being

Class II   Measures of Socialization, Maturity and Responsibility

Re	Responsibility
So	Socialization
Sc	Self-control
To	Tolerance
Gi	Good Impression
Cm	Communality

Class III   Measures of Achievement Potential and Intellectual Efficiency

Ac	Achievement via Conformance
Ai	Achievement via Independence
Ie	Intellectual Efficiency

Class IV   Measures of Intellectual and Interest Modes

Py	Psychological-mindedness
Fx	Flexibility
Fe	Femininity

- -

Strong Vocational Interest Blank (Women)

Nurs.	Nursing
S. Worker	Social Worker
Elem. Teacher	Elementary Teacher
Phys.	Physician

- -

V.I.C.S.

Vocab.	Vocabulary
Info.	Information
Sim.	Similarities
Comp.	Comprehension
V.I.Q.	Verbal I.Q.

Appendix 2.

Changes on Information Subtest of the V.I.C.S.

Original	Changed to
a) Who is the President of the United States?	Who is the Prime Minister of Canada?
1) Who was the President before him?	Who was Prime Minister before him?
9) How tall is the average American woman?	How tall is the average Canadian woman?
16) When is Washington's birthday?	When is Queen Victoria's birthday?

Appendix 3. Statistical Formulae.

$$\bar{\bar{X}}_3 = \frac{\sum_{i=1}^{N} X_i}{N}$$

$$s = \frac{1}{N}\sqrt{N\sum X^2 - (\sum X)^2}$$

Used in Part A, D and E.

$$t = \frac{\bar{\bar{X}}_3 - \bar{\bar{X}}_1}{s_{\bar{\bar{X}}_3 - \bar{\bar{X}}_1}}$$
where $S_{\bar{\bar{X}}_3 - \bar{\bar{X}}_1} = \sqrt{\frac{S_3^2}{N_3} + \frac{S_1^2}{N_1}}$

Used in Part A to E.

Comparable formulae used for Parts D and E.